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09/407,133	09/27/1999	JOHN A. PINKNEY	LAMA114491	2342

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EXAMINER

LIU, SHUWANG

ART UNIT

PAPER NUMBER

2634

DATE MAILED: 02/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

09/407,133

Applicant(s)

PINKNEY ET AL.

Examiner

Shuwang Liu

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 September 1999.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-12 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1, 2, 4, 5, 8, 9, 11 and 12 are rejected under 35 U.S.C. 102(a) as being anticipated by Pinkney et al. (IEEE, 02/1999).

As shown in figures 4 and 8, Pinkney et al. discloses a method of communicating over a wireless indoor telecommunications channel (pages 84-88), the method comprising the steps of

(1) regarding claim 1:

generating ( DPSK modulator) a pulsed signal in which information is carried in the phase of the pulsed signal;

spreading (SAW filter) the pulsed signal using a dispersive filter to form a chirp spread spectrum signal;

transmitting (antenna) the chirp spread spectrum signal over a wireless indoor telecommunications channel;

receiving (antenna) the chirp spread spectrum signal at a receiver;

despreading (SAW filter) the chirp spread spectrum signal using an inverse dispersive filter that is matched to the dispersive filter to yield a received pulsed signal; and

recovering (DQPSK demodulator) the information carried in the phase of the received pulsed signal.

(2) regarding claim 2:

in which generating a pulsed signal comprises:

modulating a data signal onto a carrier using a phase differential modulator (DQPSK); and

converting (RF switch) the modulated carrier into a pulsed signal.

(3) regarding claim 4:

in which recovering the information carried in the phase of the received pulsed signal composes phase demodulating the received pulsed signal to yield a demodulated received pulsed signal anal low pass filtering (low pass filters) the demodulated received pulsed signal.

(4) regarding claim 5:

in which the dispersive filter is a SAW filter.

(5) regarding claim 8:

As shown in figures 4 and 8, Pinkney et al. discloses a transmitter for communicating over a wireless indoor communications channel, the apparatus comprising:

a pulsed signal generator (DQPSK modulator and RF switch);

a dispersive filter (SAW filter) connected to receive a pulsed signal from the chirp signal generator and output a chirp spread spectrum signal; and

an RF section (RF LO and multiplier) for upconverting the chirp spread spectrum signal for transmission.

(6) regarding claim 9:

in which the pulsed signal generator comprises:

a data source (data in);

a differential phase modulator (DQPSK) connected to receive data from the data source; and

an RF pulse generator (RF switch) connected to receive a modulated signal from the differential phase modulator.

(7) regarding claim 11

A receiver for communicating over a wireless indoor communications channel with a transmitter defined by claim 8, the receiver comprising:

an RF receiving section (antenna and multiplier) configured to produce a received chirp spread spectrum signal as output;

an inverse dispersive filter (SAW filter) matched to the dispersive filter and connected to receive the chirp spread spectrum signal from the RF receiving section and generate a received pulsed signal; and

a data recovery section (blocks after SAW filter) connected to receive the received pulsed signal and having data as output.

(8) regarding claim 12:

The receiver of claim 11 in which the data recovery section comprises a phase demodulator followed by a low pass filter (low pass filter) and data extractor (sampler/decision device).

3. Claims 1-3, 5, and 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Takeuchi et al. (IEEE, June 1998).

As shown in figure 3, Takeuchi et al. discloses a method of communicating over a wireless indoor telecommunications channel pages 507-509), the method comprising the steps of

(1) regarding claim 1:

generating ( DPSK labeled by 1 and Pulse generator labeled by 2) a pulsed signal in which information is carried in the phase of the pulsed signal;

spreading (SAW DDL labeled by 3) the pulsed signal using a dispersive filter to form a chirp spread spectrum signal;

transmitting (antenna) the chirp spread spectrum signal over a wireless indoor telecommunications channel;

receiving (antenna) the chirp spread spectrum signal at a receiver;

despreading (SAW Matched filter labeled by 6) the chirp spread spectrum signal using an inverse dispersive filter that is matched to the dispersive filter to yield a received pulsed signal; and

recovering (SAW demodulator, output from 7) the information carried in the phase of the received pulsed signal.

(2) regarding claim 2:

in which generating a pulsed signal comprises:

modulating a data signal onto a carrier using a phase differential modulator (DPSK, 1); and

converting (pulse generator, 2) the modulated carrier into a pulsed signal.

(3) regarding claim 3:

in which the chirp signal is generated using plural dispersive filters (inherently from the multiplexity of chirp (k) in figure 3, page 509 and figure 4), each assigned to a particular symbol value, and the chirp spread spectrum signal is despread using plural inverse dispersive filters (figure 4) matched to corresponding ones of the plural dispersive filters.

(4) regarding claim 5:

in which the dispersive filter is a SAW filter (3).

(5) regarding claim 8:

As shown in figure 3, Takeuchi et al. discloses a transmitter for communicating over a wireless indoor communications channel, the apparatus comprising:

- a pulsed signal generator (2);

- a dispersive filter (3) connected to receive a pulsed signal from the chirp signal generator and output a chirp spread spectrum signal; and

- an RF section (4) for upconverting the chirp spread spectrum signal for transmission.

(6) regarding claim 9:

in which the pulsed signal generator comprises:

- a data source (input to 1);

- a differential phase modulator (1) connected to receive data from the data source;

and

- an RF pulse generator (2) connected to receive a modulated signal from the differential phase modulator.

(7) regarding claim 10:

in which the chirp spread spectrum signal includes plural symbols, and the transmitter further comprises plural dispersive filters (inherently from the multiplexity of chirp (k) in figure 3, page 509 and figure 4), each respectively associated with a corresponding one of the plural symbols.

(8) regarding claim 11:

A receiver for communicating over a wireless indoor communications channel with a transmitter defined by claim 8, the receiver comprising:

an RF receiving section (antenna and 5) configured to produce a received chirp spread spectrum signal as output;

an inverse dispersive filter (6 and figure 4) matched to the dispersive filter and connected to receive the chirp spread spectrum signal from the RF receiving section and generate a received pulsed signal; and

a data recovery section (blocks after 6) connected to receive the received pulsed signal and having data as output.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (IEEE, June 1998) in view of Fague et al. (US 5,768,317).

Takeuchi et al. discloses all of the subject matter as described above except for specifically teaching applying an equalizer to the received pulsed signal to reduce intersymbol interference as claimed.

Fague et al., in the same field of endeavor, teaches applying an equalizer to the received pulsed signal to reduce intersymbol interference (see figure 2, note: although the equalizer is not shown in the receiver side, it is inherent that the equalizer should be in a block after block 46 since the demodulator is a reversal of the modulator (64)).

It would be desirable to equalize any distortion resulting from the SAW filter in the receiver side (abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the equalizer as taught by Fague et al. in the receiver of Takeuchi et al. in order to reduce the distortion from the SAW filter.

#### ***Allowable Subject Matter***

6. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shuwang Liu whose telephone number is (703) 308-9556.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached at (703) 305-4714.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

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**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



Shuwang Liu  
Primary Examiner

February 21, 2003